

DETAILED ACTION

1. Upon further search of prior art, previous office has now been vacated in favor of a new non-final office action.

Claim Objections

2. Claims 2-10 are objected to because of the following informalities: "A method" in line 1 of claims 2-10 should read – The method –. Appropriate correction is required.
3. Examiner notes, without objection, the possibility of lack of antecedent basis in various places in claims 1 and 11-12.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "program storage device readable by a machine" is not found in the disclosure. Examiner treats the term as a computer program.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 12 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 12 is drawn to a "program" *per se* as recited in the preamble (The term "program storage device readable by a machine" is not found in the disclosure. Examiner treats the term as a computer program) and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed.

Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-5, 8-9, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou (US 6999932) in view of Keith, Jr. (US 7260579), and further in view of Anderson et al. (US 6625595).

10. Regarding claims 1 and 11-12, Zhou discloses a method, system, and a program storage device of operating a speech dialogue system (1) which communicates with a user while use is made of a speech recognition device (2) and a speech output device (3), various services (9, 10) being available to the user in the speech dialogue system (1) or via the speech dialogue system (1) and being selectable by the user in a dialogue held with the speech dialogue system (1), and then for controlling the dialogue for the selection of a service (9, 10) by the user (*the system of figure 1; speech recognizer for recognizing speech inputted from client devices; recognized result is sent to search engine; result of the search is sent back to the client devices*), and when a spoken entry

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of the user is received search words are extracted from this spoken entry (*figure 2, step 106*) and, on the basis of the search words, a number of candidate nodes (K) and/or candidate service objects (D) are sought whose assigned keywords (S) match the search words according to a predefined acceptance criterion (*figure 2, step 106; matching search keywords to keywords representing services stored in the database is an inherent functionality of the search engine*), (3) a speech output menu is produced to announce to the user the categories and/or the services (9, 10) represented by the candidate nodes (K) and/or candidate service objects (D) found for the user to select a certain category or a certain service (9, 10) (*output 12 in figure 1 and steps 114-118 in figure 2*).

Zhou fails to specifically disclose a database (6) is used having a hierarchical data structure (DS) and a plurality of nodes (K) and a plurality of paths (P) for connecting the nodes (K) mutually and for connecting nodes (K) to service objects (D) which are arranged at one end of each path (P) in the data structure (DS), the service objects (D) representing the services that are available (9, 10) and the nodes (K) representing the categories in which again other categories and/or services are classified which are represented by further nodes (K) or service objects (D) arranged in the hierarchical data structure (DS) on a level (II, III) below the respective node (K), characterized in that a plurality of paths (P) within the data structure (DS) leads at least to part of the service objects (D) and/or nodes (K) and to each node (K) and each service object (D) one or more keywords (S) are assigned; a search being made in various search steps until after a search step the number of candidate nodes (K) and/or

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candidate service objects (D) found is situated above a predefined minimum number and below a predefined maximum number and then by means of the speech output device outputting the search results.

Keith, Jr. teaches a database (6) is used having a hierarchical data structure (DS) and a plurality of nodes (K) and a plurality of paths (P) for connecting the nodes (K) mutually and for connecting nodes (K) to service objects (D) which are arranged at one end of each path (P) in the data structure (DS), the service objects (D) representing the services that are available (9, 10) and the nodes (K) representing the categories in which again other categories and/or services are classified which are represented by further nodes (K) or service objects (D) arranged in the hierarchical data structure (DS) on a level (II, III) below the respective node (K), characterized in that a plurality of paths (P) within the data structure (DS) leads at least to part of the service objects (D) and/or nodes (K) and to each node (K) and each service object (D) one or more keywords (S) are assigned (*col. 12, line 31-67, a database that stores information organized in a directory tree structure*).

Since Zhou and Keith, Jr. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Zhou by incorporating the teaching of Keith, Jr. in order to improve effectiveness of the research system by making it become more like a knowledge system where the user can find specific and related information (*col. 29, lines 25-32*).

The modified Zhou still fail to specifically disclose a search being made in various search steps until after a search step the number of candidate nodes (K) and/or candidate service objects (D) found is situated above a predefined minimum number and below a predefined maximum number and then by means of the speech output device outputting the search results. However, Anderson et al. further teach search being made in various search steps until after a search step the number of candidate nodes (K) and/or candidate service objects (D) found is situated around a reasonable number of usable search results and then by means of the speech output device outputting the search results (*col. 8, lines 34-60; "a reasonable number of usable search results" suggests that that the results are within a predefined minimum and maximum number*).

Since the modified Zhou and Anderson et al. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Zhou by incorporating the teaching of Anderson et al. in order to improve the search system by providing only reasonable search results.

11. Regarding claim 2, Zhou fail to specifically disclose a method as claimed in claim 1, characterized in that the keywords assigned to a certain node are automatically also assigned to the further nodes and/or service objects classified thereunder. However, Keith, Jr. further teach that the keywords assigned to a certain node are automatically also assigned to the further nodes and/or service objects classified thereunder (*col. 12,*

line 31-67, subcategories also include nodes; and each node is associated with keywords).

Since Zhou and Keith, Jr. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Zhou by incorporating the teaching of Keith, Jr. in order to improve effectiveness of the research system by making it become more like a knowledge system where the user can find specific and related information (*col. 29, lines 25-32*).

12. Regarding claim 3, Zhou fails to specifically disclose a method as claimed in claim 1, characterized in that after an unsuccessful search step the search on or including another level (I, II, III) of the data structure (DS) is continued until the number of candidate nodes (K) and/or candidate service objects (D) found is above the predefined minimum number and below the predefined maximum number. However, Keith, Jr. teach that after an unsuccessful search step the search on or including another level (I, II, III) of the data structure (DS) is continued until the number of candidate nodes (K) and/or candidate service objects (D) found (*col. 13, lines 14-30*).

Since Zhou and Keith, Jr. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Zhou by incorporating the teaching of Keith, Jr. in order to improve effectiveness of the research system by making it become more like a

knowledge system where the user can find specific and related information (*col. 29, lines 25-32*).

The modified Zhou fails to specifically disclose the search on or including another level (I, II, III) of the data structure (DS) is continued until the number of candidate nodes (K) and/or candidate service objects (D) found is above the predefined minimum number and below the predefined maximum number. However, Anderson teaches the search on or including another level (I, II, III) of the data structure (DS) is continued until the number of candidate nodes (K) and/or candidate service objects (D) found is around a reasonable number of usable search results and then by means of the speech output device outputting the search results (*col. 8, lines 34-60; "a reasonable number of usable search results" suggests that that the results are within a predefined minimum and maximum number*).

Since the modified Zhou and Anderson et al. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Zhou by incorporating the teaching of Anderson et al. in order to improve the search system by providing only reasonable search results.

13. Regarding claim 4, Zhou fails to specifically disclose a method as claimed in claim 3, characterized in that the search in the data structure (DS) is started on the level (I) of the service objects (D) and then the search is continued step by step on or including a next-higher level (II, III) below the nodes (K). However, Keith, Jr. further

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teach that the search in the data structure (DS) is started on the level (I) of the service objects (D) and then the search is continued step by step on or including a next-higher level (II, III) below the nodes (K) (*col. 13, lines 14-30, searching in the order from top level to lower level*).

Since Zhou and Keith, Jr. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Zhou by incorporating the teaching of Keith, Jr. in order to improve effectiveness of the research system by making it become more like a knowledge system where the user can find specific and related information (*col. 29, lines 25-32*).

14. Regarding claim 5, Zhou fails to specifically disclose a method as claimed in claim 1, characterized in that the predefined minimum number of candidate nodes (K) and/or candidate service objects (D) equals one and when only one candidate service object (D) is determined in a search step, the service (9, 10) represented by this candidate service object (D) is called up. However, it would have been obvious to one of ordinary skill in the art at the time of invention to readily realized that a smallest non-zero integer, in this case “one”, should be chosen to represent the lower limit to make sure that all possible results are covered.

15. Regarding claim 8, Zhou further discloses the method as claimed in claim 1, characterized in that the acceptance criterion is a minimum number of matches between

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the extracted search words and the keywords assigned to a node or service object (*It is inherent that if there is a match, the object or service is selected, even only one match; and that is a inherent criteria*).

16. Regarding claim 9, Zhou fails to specifically disclose the method of claim 1, wherein within a search step when the number of candidate nodes and/or candidate service objects is too small, the acceptance criterion is broadened. However, it would have been obvious to one of ordinary skill in the art at the time of invention to readily recognize that if the criterion is too strict, not many search results are found. And if the criterion is too broad, many search results will turn up and hence lower search accuracy. Therefore, one of ordinary skill in the art would readily realize that some sort of dynamic adjustment is needed when very few search results or many search results turn up. The advantage of this is to improve search accuracy.

Allowable Subject Matter

17. Claims 6-7 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN X. VO whose telephone number is (571)272-7631. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Huyen X Vo/
Primary Examiner, Art Unit 2626

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